Pacific Cemetery; Pacific Refuge
The vestiges of space objects are recycled into bits of sovereignty
to house climate refugees from Pacific Islands.

"Wilderness and Utopia": On Post-capitalist Urbanization and the Extraterrestrial Imaginary
Interview with KIM STANLEY ROBINSON by DANIEL DAOU and MARIANO GOMEZ-LUQUE

As critical scholars have suggested,[1] both Science Fiction and Critical Theory constitute mirror-image projects with equal footing in utopian thinking. The following interview with science fiction author Kim Stanley Robinson reads his work through the lens of urban and design studies. The shared affinities revealed in the course of the conversation make us think that there is room to extend this initial formulation into a triad that includes Science Fiction, Critical Urban Theory, and Design—a critical project yet to be systematically undertaken.

For philosopher Henri Lefebvre, the "urban" is a historical socio-spatial process that unfolds at a planetary scale, reshaping not only cities but all kinds of territories. The notion of "urbanization" is meant to capture the dynamism of this process in contrast with the formal fixity of "the city." Your novels strike us as "urban" in the Lefebvrian sense, as you meticulously describe a synthetic landscape in which buildings, cities, territories, and even planets are reshaped by human activity (and vice versa). Is the category of the "urban," understood in this dialectical way, a useful rubric to grasp the nuanced spatiality of your novels, and if so, to what extent do you think the notion of "planetary urbanization" could be a complement to the more technical concept of "terraforming" as deployed in science fiction (SF)?

Coming from science fiction as I do, the urban is my genre's home space, historically speaking. Early science fiction and "Golden Age science fiction" consisted of stories written mainly by urban men, as an expression of people in industrial cultures noticing the speed of technological change and writing that feeling into future histories. Thus the beginnings in Britain, France, and the US. In the US there were some outliers like Clifford Simak, Edgar Pangborn, and even Ray Bradbury, who celebrated the persistence of the pastoral in the face of this rapid industrialization, but they were also emphasizing thereby the main line of SF, which was very strongly urban. The spaceship itself was a symbolic image of the city, and Asimov, the epitome of this urban mentality, gave us the purest form of this impulse in his *Foundation* (1951) trilogy's Trantor, the world city that covered an entire planet and was the capital of the galaxy. This was an image of his beloved New York, which also took center stage in his city novel *Caves of Steel* (1954), also

Note
Footnotes throughout added by interviewers.

1
Carl Freedman, *Critical Theory and Science Fiction* (Wesleyan University Press, 2000); see also Darko Suvin, *Metamorphoses of Science Fiction: On the Poetics and History of a Literary Genre* (Yale University Press, 1979), and Fredric Jameson, *Archaeologies of the Future: The Desire Called Utopia and Other Science Fictions* (Verso, 2007).

in its "open landscape" sequel, *The Naked Sun* (1957). As an agoraphobic he loved these all-encompassing cities, and so he stands at the center of this moment in science fiction.

I've always been interested in opposing this strand of science fiction, by emphasizing that the entire planet's biosphere, what in earlier times would have been called the natural world, or wilderness, or even Nature, would never go away. The whole planet is a necessary support system for humans, our extended body so to speak. We may entrain this body to our uses and organize much of it, but we can't do without it; it doesn't go away, and it's as interesting as the cities themselves, especially as a story space. My ability to make a contribution to the ongoing conversation that is science fiction has rested partly on my feelings about this planetary context. Wilderness and utopia: this odd combination of interests got me started and gave me my way into the long conversation of my genre.

That said, it's easy for me to transcode and comprehend your question, and its assumption that urbanization organizes the entirety of the planet. The etymology of civilization illustrates this: humanity has indeed organized life on the planet, not entirely but to a large extent. There almost seems to be a kind of gravitational pull exerted by cities on people, from the first moment of their appearance some ten to twelve thousand years ago. At first just tiny nodes in a vast natural landscape organized by the biosphere as a collective, cities eventually became the organizing principle around which people lived and dominated (partly) the rest of our biosphere. Agricultural regions created the surplus of food necessary to feed the populations of cities, so cities and farms have always been interrelated; and then beyond and outside these humanly organized areas, there were residual wild regions where a few humans lived as they had before cities came into being. But these were small populations in big regions. If you want to call this whole process urbanization, I can see the sense of it, although you could flip the valence and say it's all about agriculture and the resulting surpluses finding their places. I recognize urbanization as one aspect of this, and it seems to me to capture the historical process at that infrastructural and conceptual level.

Whether my novels are doing anything like describing this process, I think is possible, but I can't say myself with any certainty, as I'm too close to my books to see them very well from perspectives so broad and theoretical. But I do think it makes sense that when writing science fiction, which is so often about people on a planet, making history together, that these aspects will come into play. Science fiction allows and even insists on being about more than just individual human relations. The crucial addition is the planet, so that you get not just literature about people, but about people and planet. This is one of the things that gives science fiction its power.

In this context, "terraforming" is what people have done continuously on Earth, but applied in fictions to other planets. The way this is metaphorical for what we do on Earth is obvious, and again the terms can be flipped, as in any good metaphor, vehicle and tenor illuminating each other.

As a public intellectual, you have outlined a vision where cities play a fundamental role in preserving the biosphere.[2] Following biologist E. O. Wilson's "Half Earth" proposal, you have suggested humans ought to move to dense, sustainable, "neo-traditional" urban centers. Unlike Wilson, you don't characterize the uninhabited remainder as "wilderness," but instead as managed landscapes. Such vision relies on a pattern of uneven spatial distribution between dense agglomerations and remote hinterlands. On the other hand, as a science fiction writer, your nuanced depictions of planetary terraforming blur the lines between the putative categories of the built and the unbuilt, cities and their extended "operational landscapes." This vision seems closer to the notion of "planetary urbanization," which entails what urban theorist Neil Brenner describes as the "disappearance of the constitutive outside." That is to say, the urban not as a bounded interiority (as traditionally represented by cities) but as a dynamic process that traverses all scales and territories. The resulting geographies are better described by the synthetic nature of their landscapes and the dissolution of the boundaries between sites of extraction, production, consumption, and dwelling.[3] How would you address the perceived tension between your position as a public intellectual, which seems to endorse a city-centric environmental vision, and the more radical view put forward in your novels, where landscapes and cities are often complexly intertwined and the boundaries between "agglomerations" and their extended and operational spatial realms seem to blur?

I would always go with my novels as being my best attempts to articulate my views. My positions as a public intellectual, such as they are, being mostly articles and talks, are greatly simplified, and consist mainly of guesses taken on the fly, in essays that are written to order, and are usually required to be too short to do justice to their topics. I try to treat them as short stories, but their form hinders me, as I can't quite get a handle on it—how to be provocative, how to capture large complex situations in a quick line of words. So for me there is no contradiction here, just different forms in which I have different commitments and competencies.

I think E. O. Wilson is a major public intellectual, a scientist/philosopher/popular writer reminiscent of people like Benjamin Franklin or William James. His "Half Earth" idea is important, and I think should be much more discussed than it has been; possibly it's too radical to be faced directly, and there might be some ageism involved as well, as he is now one of our elders. However that may be, his idea is a great one for forcing an evaluation of how we organize our activities, and how we treat our fellow creatures and the surface of the planet more generally. It's a charismatic mega-idea, both utilitarian, in that it is in our self-interest as a species to keep all our cousin species healthy and happy, and also moral, emphasizing the intrinsic value of other life-forms, which we should respect as we do any other people we know.

So I wrote about this in one essay, and I'm always happy to say more. For our discussion here, I can expand to say that I think "wilderness" is now an odd word, with a history that doesn't quite fit this "Half Earth" idea. "Wilderness" as a concept comes from a specific historical moment, which imagined that there are parts of the Earth's surface that both are and should be free of humans—"where man is a visitor only," as the US Wilderness Act of 1964 put it (approximately). Given what we know now, I think this is too pure—wrong historically, and not a helpful way to think about landscape. Humans have been on all parts of the Earth's land surface for 20,000 years now, all but

2
"A Functional Form Has Its Own Beauty: An Interview with Kim Stanley Robinson", by McKenzie Wark, *Los Angeles Review of Books*, September 1, 2013.

3
For instance, even *New York 2140* (2017), undoubtedly focused on the city as such, is consistent with this view of the urban as a totalizing process, as it describes an anthropocenic environment in which the skies are populated by "skyvillages," "skyscrafts," and "everything in between."

Antarctica, and we've been making changes to the landscape all along—at first perhaps minor, although fire has never been a small force. So really the whole of the Earth's surface has been, and is, a human space. So instead of calling it wilderness, which has a particular value, I think we should imagine the empty parts of Wilson's Half Earth idea as just that—empty—empty of humans, but not entirely. This is partly because I feel humans should be able to briefly visit anywhere on Earth, for the joy of it and the love of Earth itself, and partly because any ideas of purity make me unhappy and nervous. I prefer mongrelization, compromise, slippage, bricolage, "enough," and so on.

So, this is to address just one part of your question. "Wilderness" designates a kind of space where I've spent some of the happiest hours of my life, so I want space like it to survive for personal reasons. Can we rethink wilderness to be a particular kind of ethical position we have toward certain biomes, as a kind of human space that we have decided to cede largely to the other animals and plants and life-forms, partly in order to increase our own health? Here I'm trying to think the "Half Earth" idea and welcoming how much landscape might become at least "half empty."

Can we rethink agriculture also, as something more like what permaculture suggests? This is a set of problems in ecological technology that really must be solved. The permaculture perspective is similar to the urbanization concept, in that again cities are only part of a larger fabric, but not the most important part, because we can't live without food. So it's not that the planet has been or must be urbanized, but that cities have been or must be incorporated into a more biocentric total lifeway. Empty land, agriculture, and cities are all interpenetrated, but not entirely. Not agglomerations everywhere, a bit more differentiated than that; but all of these uses integrated, and crucial parts of a functioning whole.

You call Wilson's idea of concentrating human population on half the earth "radical" and suggest "centralizing" humans in cities to save the environment. But what about being radical in the opposite direction: if capitalism produces and is propelled by uneven development (both social and spatial), can we think about the opposite of Wilson's idea and imagine a radically decentralized "civilization" where population is spread in a novel form that is neither suburb nor metropolis, neither city nor hinterland, which might somehow lead to more evenly developed landscapes, both socially and environmentally?

My sense is that capital created uneven development by following the highest rate of return wherever it leads and abandoning regions once they don't give that highest rate. This is Arrighi's insight, and it seems right to me. So when you suggest a radically decentralized "civilization," neither cities nor hinterland, I have two immediate negative reactions: one, it sounds like suburbia, and I don't think that's a good use of space; and second, what about the animals? If humans are evenly distributed everywhere, I don't trust the animals will do well, and that to me is a priority. In that sense, I still believe in the empty spaces we used to call wilderness, and maybe here I can call them "animal spaces," without being too pure about it. But they should be left to live their lives autonomously, and not always by sneaking around the backs of human spaces either.

It's necessary to separate out the social and the environmental here, at least for my purposes of hoping for egalitarian cities, cities filled with public spaces, commons, cooperatives, and urban agricultural spaces. I think it should be possible to imagine cities where everyone shares the political and economic power about equally, while

concentrating humans in the landscape to leave a good bit of the land surface of the Earth to our fellow creatures.

Post-capitalism

As geographers David Harvey and Neil Smith have argued, the variegated geographies of uneven development are not just an aftereffect of capitalism's own internal contradictions, but the very material configuration that enables capital's logic of surplus extraction to unfold. This suggests that any attempt to supersede capitalism must by necessity be linked to a different spatiality. In other words, the question of post-capitalism is also an urban project. For all the recent theorization on possible post-capitalist political economies and ecologies, this spatial dimension remains largely undertheorized. Yet, as Lefebvre strikingly put it: "A revolution that does not produce a new space has not realized its full potential." As you have stated, your writings have been, from the beginning, "about imagining various postcapitalisms."[4] We read your books as "spatial novels" in which the interaction between people and environments is portrayed at a high level of resolution.[5] To what extent can your work be read as a deliberate attempt to reveal the spatial dimension of post-capitalism? How instrumental is the SF novel in raising awareness about the importance of the spatial question in the articulation of alternatives to capitalism?

This idea of a post-capitalist space is really interesting to me. It makes sense, and it would come about in part as the result of a deliberate and conscious post-capitalist urban design.

I suppose I've been exploring elements of this idea in my novels, but seldom if ever with conscious intent. Some of my characters, like Arkady Bogdanov in *Red Mars* (1992), were more explicitly interested in this aspect of things than I was myself. But now that you mention it, other manifestations of this kind of thing in my work occur to me. There are the various asteroid interiors in *2312* (2012), and the old Met Life tower in *New York 2140*, and the free crater in *Red Moon*, and the town of El Modena in *Pacific Edge* (1990). No doubt other examples exist; I recall in particular having the opportunity to design city after city in my Mars trilogy and enjoying that immensely. There I was often thinking about the ancient Greeks' placement of their cities on overlooks or in other locations with a fine view. Visiting the ruins of these places in the mid-1980s, I often felt the Greeks' locations were as much aesthetic as strategically defensive. They had beautiful prospects. And as I studied the new topographic maps of Mars generated by the Viking orbiter, I saw there would be many opportunities on Mars to build in similarly dramatic places, just for the pleasure of being there and looking around.

So that was about pleasure over profit, and even over utility. But also my Martian settlements often included ideas about a more egalitarian built environment. Surely the concept of the commons must come into play when trying to imagine any post-capitalism—the commons or else other kinds of public space, meaning owned by all, or by no one.

4 "The Realism of Our Time", Interview with Kim Staley Robinson by Helena Feder, *Radical Philosophy* 2.01, February 2018.

5 Fredric Jameson, *Archaeologies of the Future* (Verso, 2007), 400.

It's notorious that the privatization of everything (except risk) has reduced public space in all the landscapes to a minimum, and most especially in cities. And the commons was a pre-capitalist dispensation, with things to teach us going forward. The commons was never unregulated or free space, rather it was regulated by norms, and it's quite possible there was an element of gangsterism in the practice of their regulation, but also, in village life, it was probably more often a matter of propriety, and getting along by way of sociability. Now, in our world, the Maine lobster fishery can be understood as a kind of commons providing a usufruct, and its regulation of that taking is legal and strict, being a matter of managing a finite resource without ownership per se. One owns tenure rights in such a system and can only take enough from the commons to make a living, not a profit over and above that living. This is suggestive for a more comprehensive approach to the world.

I'm also thinking now of the somewhat non-capitalist enclaves within the global capitalism system that I have experienced myself. One is the scientific station, which I've seen in Antarctica. McMurdo and South Pole stations are run by the National Science Foundation for the pursuit of science, and while living there one exists in a non-monetary collective situation, where housing, food, and even clothing are provided, and the scientists are doing the work that will make their careers in academia, while the support crews are making a salary banked for use back in the world. So while living there, even though there is no such thing as a pocket utopia, it feels different—at least it did to me. And I saw that people were fond of it in ways they often couldn't explain, attributing their pleasure to the landscape (which is also inexplicable in terms of how pleasing it is), or to the general feeling of companionable dedication to a shared enterprise that is created by the rules of the place. The infrastructure itself is only incidental to that experience, it's more a matter of rules of conduct; the design is no more than a kind of "adhocitecture," a ramshackle and accidental assemblage of buildings without urban design. Villages in the Arctic look much nicer and more intentional than McMurdo, and I wonder what the lived feeling in these places is like.

Also, I've lived for nearly 30 years in Village Homes, a neighborhood of Davis, California, that was designed and built in the 1970s to resemble in certain ways European village life. One owns one's house and the property under it, but the rest of the land in the village is owned in common by all its residents, and that part of things is run as a collective, with an emphasis on food production, common spaces, and shared buildings for communal activities. It's really just a tweaking of ordinary suburbia, but the small tweaks have created big effects. Having grown up in an ordinary suburbia, I feel the differences in Village Homes acutely, and it's been a great pleasure to live in this newer-based-on-older designed space.

I wonder, thinking about this, if there shouldn't be an "Institute for Post-capitalist Studies," maybe one in every university—a multidisciplinary institute like many that are springing up around one topic or another—in this case combining inputs from economics, ecology, engineering, philosophy, architecture, sociology, history, literature, materials science, design, urban planning, anthropology, and so on, all gathered to theorize this very pressing problem in human history. Since we need post-capitalism to survive, surely it should be studied and designed.

In such institutes, it would make sense to go to Mondragon, Spain, and study the place, especially by asking residents what it feels like to live there, or grow up there. Same with Kerala in India, and in any other place around the world where there seems to be some kind of emergent post-capitalism, or precursor states, already alive in the world and available as a modeling exercise to be studied.

For me, Mondragon has always stuck out as an example of an alternative way already existing. I've never been there, but I've had some extraordinary encounters with it because I've mentioned it so often in my books. In the Wikipedia article on it there is a section called "Mondragon in Fiction," which I was excited to see, until I found only my books were mentioned in it; I was hoping for more. Once I got a call from people at a radio station in Mondragon, asking what I thought of a financial crisis they were suffering and wondering if I had any advice for them, which I was not competent to give. But that event indicated that at least some people there are aware that the town has been featured in my work. Lastly, a kind professor from a nearby university sent me his book describing how Mondragon came to be, so now I know its history better. It's interesting, because its origins came out of something like Catholic liberation theology, appearing in Spain rather than Latin America. During the Franco regime, a single priest was sent to the region as part of a pacification effort of the Basques, and he talked with people there for 15 years before helping them to initiate and design their alternative system, which they all thought of as "capitalism with morals"—which is another way of saying post-capitalism.

So, how has that worked? And what does it feel like? This would be one fruitful area of study. And there would be many others.

The idea of "pocket utopia" is very interesting to us because it alludes to the problem of scale. You mention the case of the community of Mondragon in Spain. Do you think models like these can be scaled up? In your novels, you navigate between and across multiple scales: a city, a spaceship, a planet, the solar system. But how freely can we extrapolate between scales when thinking about "global" systemic change? A big critique of the notion of "carrying capacity," for instance, is that it's a concept originally linked to human-made seafaring vessels that is now being "upscaled" and applied to the whole Earth as such. Is this trans-scaling process possible, or are there thresholds where differences in degree become differences in kind that make any extrapolation impossible?

Multiple scales exist but they are not the same in terms of the scaling problems involved, some being simply bigger than others. For example, the trip to Tau Ceti is ten billion times longer than the trip to our moon. Very little scales across this huge change; we can't get to Tau Ceti just because we can cross space to our moon.

On the other hand, regional governments compared to world government; that's not such a huge shift. Could the whole world be run as a Mondragon? Could it be run as a Finland? Is the international treaty system, the loose agglomeration of treaties that runs the world now, hugely different from any nation-state governmental system? I don't think so. Here the scaling problems are not so evident to me.

Scaling is often just capitalism talking about maximizing profit; the more you can exploit with one law or one system, the more "efficient" it is, the better it "scales." But the words here are not referring to the same things, as far as I can tell. I don't trust network theory or complexity theory, or any other theoretical construct in which language is mixed with mathematics to come to something like a scientific conclusion. So often it is an ideological construct pretending to be a science like physics. And I fully believe physics is an ideological construct also, but it has reiterative and reductive aspects to it that make it easier for me to agree that what is being asserted has a real reality. For words like "scale" you might as well be using metaphors; in fact it kind of is a metaphor, right? Something from mapping, applied to economics or the like.

I think carrying capacity comes not from shipping, i.e. how much weight a ship can take, but from population biology on islands, i.e. how many animals can live on an island without destroying the plant base, and then up to predators etc. So Earth's carrying capacity for humans is a function of Erhlich's IPAT formula, and yes that makes it ridiculously problematic, as all kinds of values have to be taken into account. I've read carrying capacity estimates for humans on Earth ranging from 100 million to 12 trillion, and even when you throw these out as crazy outliers, the serious estimates range from 2 to 30 billion. Despite this wide variance it's a good way to discuss values, or maybe because of it; it's worth considering for how it focuses attention on the factors going into the judgment.

So, to the point of your question: I don't see why the world couldn't run as Mondragon runs. But this isn't to say that there aren't even better systems out there.

There are many instances of spatial invention in your work.[6] This inventiveness parallels some radical design visions from the 20th century, such as the "città nuova" of the Italian Futurists, Archizoom's "No-stop City," or so-called 'arcologies' from the 1970s. To what degree do you keep radical design projects in mind when designing your spatial universes?

I've scoured the literature looking for alternative models that already exist in the world to help me imagine my futures. I haven't found that much, but that may be my deficiency as a researcher. Still, I would wish for more in the way of models to imitate. If they are theoretical constructs only, rather than built environments already existing, they are of less help to me, because in essence they too are science fiction stories, written in a nonfiction form. That's just a genre difference, and I see the utopian elements in them quite clearly, but I would like to see more tangible demonstrations.

In general, I'm acutely aware of science fiction when I see it in its various disguises, such as declarations of human rights, financial predictions, demographic forecasts, and any kind of so-called futurisms—all these are to me science fiction stories, pretending to be something more to gain more authority. Often, they seem to be evoking status as science itself, other times as prophecy, a very ancient mystical power. I prefer to understand all of these as fictions, often utopian fictions.

Extraterrestrial

You once summarized capitalism's logic as the algorithm "More is better."[7] Today, a new breed of private space entrepreneurs seeks to extend this logic into new extraterrestrial frontiers of surplus extraction. Jeff Bezos's recent update of Gerard O'Neill's iconic space settlements from the 1970s is problematic because it reproduces two of capitalist urbanization's most distinct spatial tropes: the megalopolis and the suburb. Likewise, Elon Musk's city on Mars appears very much as an extraction camp. These are prime examples of how a naively utopian mainstream "extraterrestrial aesthetic" betrays the underlying logic of capitalism. In contrast, your work offers a nuanced spatial portrait of life in extraterrestrial environments.[8] Yet, despite its evocative power, the language of the SF novel resists any easy visual representation. Given the problematic nature of the mainstream "extraterrestrial aesthetic" articulated by entrepreneurs like Bezos or Musk, how could a more fruitful relationship between the utopian language of SF and the critical representational apparatus of the design disciplines be staged so as to reclaim the extraterrestrial horizon as an alternative utopian space?[9]

The highly publicized visionary statements of the space-cadet billionaires are basically celebrity hobbies. Musk has done really good work in cars and batteries and solar power and rocketry, so whatever his personal idiosyncrasies, his actual work has been innovative and positive. His Mars project looks to me like more of a hobby than a practical proposal, in effect his own version of doing science fiction.

Bezos also has a useful interest in space, and his own science fiction stories about O'Neill colonies and the like have to be taken as such and separated out from the real work of Blue Origin, which is making great progress on next-generation rocketry.

Always, in the case of these two and any other space-cadet individuals, wealthy or not, it has to be remembered that their science fiction stories may be far off the cutting edge of what the sciences are actually doing now, and where we are in human and planetary history. Their stories, expressed as plans or pronouncements, may chiefly reflect the science fiction they read when they were young. I know that feeling myself, as I often feel that the New Wave science fiction of 1965–75 was as good as the genre ever got as a literature. But this probably has something to do with me being young and the genre surprising me with new things.

Now there are ongoing new developments in all the sciences, and this means that new science fiction stories have to change with the times. This accounts for the rise of climate fiction, which is just a name for science fiction concerned with the near future, which we now know will be massively impacted by the climate change we've already initiated. Then also, materials science and ecological economics have changed what utopian fiction should read like. And so on. The danger is getting stuck in the dreams of your youth, when the situation is changing so rapidly that these dreams have become antiquated before being enacted.

This happens to science fiction all the time. Images of the future reflect psychic energies so powerful that they act like a hose on the ground, whipping side to side and shooting water out at a tangent to the eventual real course of events. It's always necessary to adjust one's science fiction imaginary to the current moment and the reality that we're inventing together. Even that imaginary will be at a tangent and later obviously wrong, but at least it's ours now.

So, given our current dilemma, your phrase "extraterrestrial utopia" now identifies what has now become a kind of fantasy space. Space settlements are going to remain at the level of scientific stations for decades to come; the crucial story for the next century is completely Earthbound. This is not a bad thing. People who are still conceptualizing space as the locale for utopia have missed the point of the Anthropocene and are mainly indulging in fantasies of escape. They're marginalizing themselves from the real problems of our time.

6
Many examples come to mind, from the moving city of Terminator and the hollowed asteroids ("terrariums") in *2312* to the space elevator of the *Mars* trilogy to the vertical archipelago of superscrapers in *New York 2140*.

7
"Power and the Space of the Planet", Columbia GSAPP, April 15, 2016.

8
For instance, the *Mars* trilogy suggests a complex amalgamation between human architecture and the eeriness of the Martian landscape—a distinct "Martian urbanism" that does not resemble or mimic Earth's precisely because it results from the struggle to find alternatives to the imperative "More is better."

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By design disciplines we mean architecture, urban design, and landscape architecture.

During the latest World Ecology Network conference, you referenced a debate taking place in the most recent volumes of *New Left Review* around the problem of economic growth.[10] In short, it's clear there's a fault line between the economy and planetary ecology, but where that fault line resides is not so clear. Some argue the problem is not so much capitalism but growth, suggesting there can be a "stationary-state" capitalism or implying that growth would be a problem even under socialism. Others suggest that growth can be decoupled from the environment. Being as it is, material economic growth seems to be intertwined with capital and fundamentally at odds with the biophysical well-being of the planet. Most environmentalists agree that, on a planet with finite resources, growth can only be finite as well. Your novels depict future scenarios where humanity has gone on to grow into other planets or the entire solar system. What, from your perspective, is the logic of the transition that would take us to such a historic stage? Is your position fundamentally different from that of "terrestrial" environmentalists? Let's say endless expansion weren't at odds with ecological viability and were technologically feasible, would it still be desirable?

I think I'm a terrestrial environmentalist. It's just that if you take the long view, if we manage to get into balance as a global civilization with the biosphere of Earth, a sustainable civilization here, then we might explore our solar system as an interesting addition to what we do; but it can't happen without the successful Terran civilization coming first. And a few space colonies wouldn't help us to create a sustainable civilization here either. So it's a matter of taking a really long and utopian view; if we succeed on Earth, we'll play around in our solar system. And not among the stars, because they are too far away. So I've come to a very particular and circumscribed vision of humanity's future, or so it seems when I answer these questions.

Growth in this context is very much a capitalist word, having to do with GDP and profit. These have to grow, or the system falls apart from internal logical contradictions of its own rules. These rules have nothing to do with biosphere health or human welfare. They are like a game we play, with high stakes because of uneven returns and simply because of the power of the few over the many, whether that can be maintained or not. But it's a very destructive game, if sustainability and justice are the goals. It's feudalism liquified.

One thing happening here, at the level of language, is a slippage between capital and capitalism. If you define capital as the useful residue of human labor, as some people do, then capital is a good thing. Then capitalism, distinct from this good capital, is a power relation, a hierarchy of few over many, as in feudalism; capitalism is clearly bad for people and the biosphere, even though the 1 percent do well, and really the top 20 percent of the economic order. But the rest of humanity suffers, and the entirety of the biosphere is strip-mined, so it's a bad system that we have to change for civilization to survive.

But still, back to capital and growth of capital: A refrigerator is a health need. Toilets are health needs. Medicine and education are human goods. If these are defined as capital, then capital has good forms. If capital on the other hand is defined as nothing more than the M prime in the M-C-M prime formula, then capital is simply profit and is no more than an index, like any other financial index, of the success of power relations

10
See Kim Stanley Robinson, "The Good Anthropocene," keynote address presented at the World Ecology Network 5th annual conference, "Planetary Utopias / Capitalist Dystopias," San Francisco, June 2, 2019; and Lola Seaton, "Green Questions," *New Left Review* 115 (January–February 2019).

and indirectly as an indicator of the destruction of the biosphere. So it's crucial to define our terms here, or we can get confused discussing these issues. It happens all the time.

So, in regard to growth, there are indexes like the Human Development Index, instead of GDP, to measure a different kind of growth—growth in human welfare, which implies biosphere welfare too. That kind of growth is good and is more likely to happen in socialism than capitalism. Growth of GDP, on the other hand, is in the end terrible for all concerned. So this all has to be destranded, and discussed one term at a time, in some detail—more than we have space for here.

But it should be said that there is a kind of continuing, never-ending work of improvement of our systems and all our efforts, socially and technologically, that could be called growth and yet would be compatible with biosphere health. In essence, the work of integrating a human population of say eight billion people into Earth's biosphere successfully—that is how civilization's project should be defined, and increasing success at that could be defined as growth if you want to, although that risks confusion with capitalism's use of the word which usually denotes GDP or profit or some other index of bad growth. Better to say that the necessary good work will never end. It's a project of integrating two different worlds (biosphere and human cultural) as intelligently and successfully as possible. This is so hard that it won't ever be solved completely, so it's an ongoing project and means that most of this debate concerning growth versus de-growth is off the mark and confusing the issue.

Future

You have often brought up the usefulness of Raymond Williams's notion of the "residual" and "emergent" cultural elements in bridging the present with fictional futures. In this regard, the historical horizon of your novels remains relatively close in time.[11] In contrast to Williams's *cultural* residual, today we face a novel *ecological* residual (anthropogenic CO2, nuclear waste, plastic pollution) whose effects will extend tens of thousands of years into the future. The Anthropocene, understood as the inscription of human action in geological time, has meant that scientific fact has begun encroaching into a temporal horizon traditionally associated with science fiction. Indeed, H. G. Wells's foundational *Time Machine* (1895) comes to mind as the most prototypical case in which the future horizon itself reaches the very limits of what can be thought. Have you ever considered writing a novel that goes that far into the future, a kind of *Time Machine* for the Anthropocene—or, to put it in terms of your own work, a sort of "inverted" *Shaman* (2013)? How do you calibrate the historical distance between your novels' future horizons and our own present?

You surprise me here, because I have indeed considered this figure you mention in the question, wondering if I could go as far into the future as I went into the past in *Shaman*. That would mean 32,000 years into the future, and so my answer was no, I couldn't do it. In fact I was so boggled at the idea that some kind of circuit breakers in my head flipped to prevent conceptual overload.

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Red Mars begins in 2026; New York is drastically altered by anthropocenic dynamics in 2140; by 2312 the solar system is inhabited; *Aurora* (2015) is centered on an intergenerational starship launched in the 26th century, and *Galileo's Dream* (2009) catapults us into the year 3020.

For me, even thinking about the year 2312 felt like imagining a very distant far future. And the year of the future action in *Galileo's Dream*, something like 3100 CE, is mainly a way of indicating that that novel's story is some kind of Renaissance fantasia of the type seen in the fictional work of Kepler or Bruno, or the *Hypnerotomachia Poliphili* (1499) by Francesco Colonna. Putting that part of my story so far in the future gave me some cover for my time travel technology, which is so fantastical, in effect a fantasy element, that it requires some pretty vigorous hand-waving.

For me, the future quickly exceeds our ability to imagine it. Some of my fellow science fiction writers are fearless in this regard, but what they do in their far futures is really a kind of fantasy, designed to emphasize certain aspects of human existence. They are writing philosophical romances, or science fantasy, as the work of Jack Vance and Gene Wolfe is sometimes called. Iain Banks's Culture novels also come to mind. I wrote a science fantasy story myself, called *A Short, Sharp Shock* (1990), and enjoyed it very much. The far future is a great story space, but my imagination doesn't usually run in that direction. If I had an idea that seemed interesting to me, I might try it. Because ultimately it does seem like a good symmetry to do a novel that matches *Shaman* in temporal distance from us, but in the other direction. A real challenge.

We would like to conclude with a final question alluding to Asimov's quintessential "Last Question," (1956) which deftly navigates the challenges of representing an utterly unimaginable future. His story deals with the prevailing natural eschatology of thermodynamic fatalism which pervades most environmental thinking. The "last question" is in fact whether entropy can be reversed. Yet, in facing this seemingly insurmountable question, Isaac Asimov seems to be enacting what Jameson defines as the function of utopia: to think that which appears as unthinkable from our own historical vantage point. Given your championing of utopianism in SF at times when most of the field seems dystopian, what do you think is the most intractable challenge for the utopian imagination today? In other words, what is your "last question"?

For me, "the most intractable challenge for the utopian imagination today" is taking the first step to get from here to there. What policies and actions might initiate rapid change for the good? There are lots of good ideas, even entire systems that if instituted worldwide would almost certainly be hugely better for all concerned than the way we live now. Say the whole world worked like Mondragon, or Finland; things would be better, and of course there are even more radical plans that exist in theory. But how do we start that process and get it going fast enough to match the crisis?

In other words, how do we seize capital? How do we seize finance? How do we pay everyone to do the work the biosphere urgently needs? How do we make that good and necessary work earn the "highest rate of return"?

This is perhaps an amazingly literal response to something so philosophical as "the last question." Maybe I've reversed figure and ground somehow. I often do that. Or maybe I'm saying "the last question" is always the first one you can't answer, the one where you get stuck. If you can't answer it, it becomes the last question for you, in the way that the thing you find that you are searching for is always in the last place you look, because you stop looking after that.

Or maybe what I'm saying is that right now, nothing else matters but avoiding a mass extinction event. This has become my baseline definition of utopia, given where we are now. If we can avoid a mass extinction event, then all kinds of possibilities open up. Then there won't ever be a last question. . . .

International Space Station
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